REMARKS

An Excess Claim Fee Payment Letter is attached hereto to cover the cost of five (5) excess total claims.

Claims 9-16 and 20-37 are all the claims presently pending in the application. Claims 10, 12-13 and 20-21 have been amended to more particularly define the claimed invention. Claims 33-37 have been added to claim additional features of the invention.

It is noted that the claim amendments are made only for more particularly pointing out the invention, and not for distinguishing the invention over the prior art, narrowing the claims or for any statutory requirements of patentability. Further, Applicant specifically states that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Applicant gratefully acknowledges the Examiner's indication that claims 12-13 would be allowable if rewritten in independent form. However, Applicant respectfully submits that all of the claims are allowable.

Claim 20 stands rejected under 35 U.S.C. § 102(a) as being allegedly unpatentable over alleged admitted prior art (e.g., Figures 1 and 2) (hereinafter, the "alleged APA). Claims 9-11, 14-16 and 21-23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the alleged APA in view of Huber et al. (U. S. Patent No. 5,331,449). Claims 24-32 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the alleged APA in view of Huber and further in view of Okuno et al. (U. S. Patent Pub. No. 2001/0000442).

These rejections are respectfully traversed in view of the following discussion.

I. THE CLAIMED INVENTION

The claimed invention (e.g., as recited in the exemplary embodiment of **claim 9**) is directed to an optical communication system including a first optical fiber connected to a first station which transmits an optical signal for a plurality of channels, a second optical fiber connected to a second station, a third optical fiber connected to a third station, and a light branching apparatus which includes an optical splitter which splits the optical signal into at least a first optical channel signal on a first channel of the second optical fiber and a plurality

of second optical channel signals on a plurality of second channels of the third optical fiber.

Importantly, the light branching apparatus also includes a first wavelength dispersion compensator formed on the second optical fiber, which is provided for the first channel and compensates wavelength dispersion of the first optical channel signal **due to the optical splitter** (Application at Figure 3; page 7, line 26-page 8, line 11). Unlike conventional systems, the claimed invention compensates wavelength dispersion due to the light branching apparatus (e.g., dispersion caused by the optical splitter) (Application at page 23, lines 1-14).

Another exemplary aspect of the claimed invention (e.g., as recited in **claim 20**) is directed to an optical communication system including a light transmitter station, a first light receiver station in communication with the light transmitter station via an optical transmission line comprising a plurality of optical fibers, a light branching apparatus formed on the optical transmission line between the light transmitter station and the first light receiver station, and a second light receiver station in communication with the light transmitter station via the optical transmission line. A path between the light transmitter station and the first light receiver station includes a main transmission path, and a path between the light branching apparatus and the second light receiving station includes a sub-transmission path.

Importantly, in this exemplary aspect the light branching apparatus includes an optical splitter which splits the plurality of optical signals from the light transmitter station into at least a first optical channel signal on a first channel in the main transmission path and a plurality of second optical channel signals on a plurality of second channels in the sub-transmission path, a first wavelength dispersion compensator for compensating wavelength dispersion **due to the optical splitter** on the main transmission path, and a second wavelength dispersion compensator for compensating wavelength dispersion **due to the optical splitter** on the sub-transmission path (Application at Figure 3; page 15, lines 14-24). As noted above, unlike conventional systems, the claimed invention compensates wavelength dispersion due to the light branching apparatus (e.g., dispersion caused by the optical splitter) (Application at page 23, lines 1-14).

Another exemplary aspect of the claimed invention (e.g., as recited in **claim 31**) is directed to an optical communication system including a first station transmitting an plurality

of optical signals having different wavelengths, respectively, second and third stations in communication with the first station, and a light branching apparatus including an optical splitter/combiner which receives the plurality of optical signals from the first station, and branches the plurality of optical signals such that one of the plurality of optical signals is branched to the second station and a remainder of the plurality of optical signals is branched to the third station. The second station transmits an optical signal having a same wavelength as the one of the plurality of optical signals, to the light branching apparatus, and the optical splitter/combiner combines the optical signal from the second station with the remainder of the plurality of optical signals to form a combined optical signal, and forwards the combined optical signal to the third station.

Importantly, in this exemplary aspect, the light branching apparatus includes a first wavelength dispersion compensator for the one of the plurality of optical signals branched to **the second station**, and a second wavelength dispersion compensator for the optical signal **from the second station** (Application at Figure 9; page 20, line 6-page 21, line 26). Unlike conventional systems, the claimed invention may compensate wavelength dispersion of an optical signal in a specific wavelength range due to a portion of the external transmission path (Application at page 23, lines 15-24).

Another exemplary aspect of the claimed invention (e.g., as recited in **claim 32**) is directed to a light branching apparatus for an optical communication system. The apparatus includes a plurality of optical splitter/combiners which receives a plurality of optical signals from a first station, and branches the plurality of optical signals such that a first portion of the plurality of optical signals is branched to a second station and a second portion of the plurality of optical signals is branched to a third station, an optical switch which switches a transmission path between a first transmission path between the first station and the second station, and a second transmission path between the first station and the third station.

Importantly, in this exemplary aspect, the apparatus includes first and second wavelength dispersion compensators which are formed in the second transmission path and compensate for a wavelength dispersion **due to a change of transmission path length when the transmission path is switched by the optical switch** between the first and second

transmission paths (Application at Figure 10; page 21, line 27-page 22, line 22). Unlike conventional apparatuses, the claimed invention can compensate for a wavelength dispersion due to a change of transmission path length **when the transmission path is switched** by the optical switch between the first and second transmission paths (Application at Figure 10; page 23, line 25-page 24, line 10).

II. THE ALLEGED PRIOR ART REFERENCES

A. The Alleged Prior Art Figures 1 and 2

The Examiner alleges that alleged prior art Figures 1 and 2 teach the invention of claim 20. Applicant submits however, that there are elements of the claimed invention that are not taught or suggested by Figures 1 and 2.

The alleged prior art Figures 1 and 2 illustrate a conventional optical fiber communication system which includes optical transmission end station 11, optical reception end station 12, light branching apparatus 13, and transmission and reception end station 14 (Application at Figure 1).

However, Applicant submits that alleged prior art Figures 1 and 2 do not teach or suggest:

"wherein said light branching apparatus comprises:

an optical splitter which splits said plurality of optical signals from said light transmitter station into at least a first optical channel signal on a first channel in said main transmission path and a plurality of second optical channel signals on a plurality of second channels in said sub-transmission path;

a first wavelength dispersion compensator for compensating wavelength dispersion ***due to said optical splitter*** *on said main transmission path; and*

a second wavelength dispersion compensator for compensating wavelength dispersion ***due to said optical splitter*** *on said sub-transmission path*", as recited, for example, in claim 20 (Application at Figure 3; page 15, lines 14-24). As noted above, unlike conventional systems, the claimed invention compensates wavelength dispersion due to the light branching apparatus (e.g., dispersion caused by the optical splitter) (Application at page 23, lines 1-14).

Clearly, these features are not taught or suggested by Figures 1 and 2. Indeed, the background section of the Application expressly states that in the conventional systems of Figures 1 and 2, the dispersion equalizing fibers 18, 19, 21 and 22 are **optical fibers which sandwich the light branching apparatus 13** (Application at page 6, line 23-page 7, line 8). That is, the dispersion equalizing fibers are not included as part of the light branching apparatus 13. Thus, the systems in Figures 1 and 2 are completely different from the claimed invention.

Moreover, nowhere do Figures 1 and 2 even associate an optical splitter with wavelength dispersion. Therefore, certainly Figures 1 and 2 do not teach or suggest a first wavelength dispersion compensator for compensating wavelength dispersion **due to the optical splitter** on the main transmission path, and a second wavelength dispersion compensator for compensating wavelength dispersion **due to the optical splitter** on the sub-transmission path.

Therefore, Applicant submits that these references would not have been combined and even if combined the combination would not teach or suggest each and every element of the claimed invention. Therefore, the Examiner is respectfully requested to withdraw this rejection.

B. Huber

The Examiner alleges that the alleged prior art Figures 1 and 2 would have been combined with Huber to form the invention of claims 9-11, 14-16 and 21-23. Applicant submits, however, that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of the claimed invention.

Huber discloses an optical fiber tree which includes a optical fiber splitter 98 and a fiber optical amplifier 100 at the output of the splitter 98 to **compensate for the accumulated loss** resulting from the splitter 98 and the coupling between the splitter and the amplifier (Huber at col. 7, lines 25-30).

However, Applicant submits that these references would not have been combined as alleged by the Examiner. Indeed, these references are directed to different problems and

solutions.

Further, these references are completely unrelated, and no person of ordinary skill in the art would have considered combining these disparate references, absent impermissible hindsight.

Indeed, Applicant submits that the Examiner can point to no motivation or suggestion in the references to urge the combination as alleged by the Examiner. In fact, contrary to the Examiner's allegations, neither of these references teach or suggest their combination. Therefore, Applicant respectfully submits that one of ordinary skill in the art would not have been so motivated to combine the references as alleged by the Examiner. Therefore, the Examiner has failed to make a prima facie case of obviousness.

Moreover, Applicant submits that neither the alleged prior art Figures 1 and 2, nor Huber, nor any combination thereof, teaches or suggests "*a first wavelength dispersion compensator formed on said second optical fiber, which is provided for said first channel and compensates wavelength dispersion of said first optical channel signal due to said optical splitter*", as recited in claim 9.

In addition, neither the alleged prior art Figures 1 and 2, nor Huber, nor any combination thereof, teaches or suggests:

"*wherein said light branching apparatus comprises:*

an optical splitter which splits said plurality of optical signals from said light transmitter station into at least a first optical channel signal on a first channel in said main transmission path and a plurality of second optical channel signals on a plurality of second channels in said sub-transmission path;

a first wavelength dispersion compensator for compensating wavelength dispersion ***due to said optical splitter*** *on said main transmission path; and*

a second wavelength dispersion compensator for compensating wavelength dispersion ***due to said optical splitter*** *on said sub-transmission path*", as recited, for example, in claim 20 (Application at Figure 3; page 15, lines 14-24).

As noted above, unlike conventional systems, the claimed invention compensates wavelength dispersion due to the light branching apparatus (e.g., dispersion caused by the optical splitter) (Application at page 23, lines 1-14).

Clearly, these features are not taught or suggested by Figures 1 and 2. Indeed, the Examiner concedes that Figures 1 and 2 do not teach or suggest these features, but alleges that these features are taught by Huber. The Examiner is clearly incorrect.

In fact, the Examiner attempts to rely on Huber at col. 7, lines 26-28 to support his position. Specifically, the Examiner attempts to equate the fiber optical amplifier 100 with the wavelength dispersion compensator of the claimed invention. Clearly, this is unreasonable.

In fact, Applicant would point out that optical amplifier 100 in Huber is merely used to "**compensate for the accumulated loss resulting from splitter 98 and the coupling between splitter 98 and amplifier 100**" (Huber at col. 7, lines 25-29). Nowhere does Huber teach or suggest that the amplifier is used for wavelength dispersion compensation. Indeed, Huber does not even mention "wavelength dispersion" anywhere and certainly does not even discuss compensation of wavelength dispersion.

Applicant would point out that it is important to understand that wavelength dispersion is not necessarily equivalent to signal loss. Indeed, "signal loss" may be defined as a decrease in the amplitude of signal pulse. Wavelength dispersion, on the other hand, may be defined as a propagation of different wavelengths as different speeds which causes waveform distortion (e.g., see Application at page 1, line 19-page 2, line 20).

Therefore, **using an amplifier to compensate for a signal loss (i.e., amplitude) as in Huber, is completely unrelated to using a wavelength dispersion compensator to compensate for dispersion (e.g., waveform distortion) as in the claimed invention.**

Therefore, Huber clearly does not teach or suggest the light branching apparatus having a wavelength dispersion compensator of the claimed invention. Therefore, Huber certainly does not make up for the deficiencies of the alleged prior art.

Therefore, Applicant submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of the claimed invention. Therefore, Applicant respectfully request that the Examiner withdraw this rejection.

C. **Okuno**

The Examiner alleges that the alleged prior art Figures 1 and 2 would have been combined with Huber and further combined with Okuno to form the invention of claims 24-32. Applicant submits, however, that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of the claimed invention.

Okuno discloses a wavelength division multiplexed (WDM) optical communication system which includes a hybrid transmission unit in which a single-mode optical fiber and a dispersion-shifted optical fiber are arranged such that signals successively pass therethrough (Okuno at Abstract).

However, Applicant submits that these references would not have been combined as alleged by the Examiner. Indeed, these references are directed to different problems and solutions.

Further, these references are completely unrelated, and no person of ordinary skill in the art would have considered combining these disparate references, absent impermissible hindsight.

Indeed, Applicant submits that the Examiner can point to no motivation or suggestion in the references to urge the combination as alleged by the Examiner. In fact, contrary to the Examiner's allegations, neither of these references teach or suggest their combination. Therefore, Applicant respectfully submits that one of ordinary skill in the art would not have been so motivated to combine the references as alleged by the Examiner. Therefore, the Examiner has failed to make a prima facie case of obviousness.

Moreover, Applicant submits that neither the alleged prior art Figures 1 and 2, nor Huber, nor Okuno, nor any combination thereof, teaches or suggests:

"wherein said light branching apparatus comprises:

an optical splitter which splits said plurality of optical signals from said light transmitter station into at least a first optical channel signal on a first channel in said main transmission path and a plurality of second optical channel signals on a plurality of second

channels in said sub-transmission path;

a first wavelength dispersion compensator for compensating wavelength dispersion ***due to said optical splitter*** *on said main transmission path; and*

a second wavelength dispersion compensator for compensating wavelength dispersion ***due to said optical splitter*** *on said sub-transmission path*", as recited, for example, in **claim 20** (Application at Figure 3; page 15, lines 14-24). As noted above, unlike conventional systems, the claimed invention compensates wavelength dispersion due to the light branching apparatus (e.g., dispersion caused by the optical splitter) (Application at page 23, lines 1-14).

In addition, neither the alleged prior art Figures 1 and 2, nor Huber, nor Okuno, any combination thereof, teaches or suggests:

"*wherein said light branching apparatus further comprises:*

a first wavelength dispersion compensator for said one of said plurality of optical signals branched to said second station; and

a second wavelength dispersion compensator for said optical signal from said second station", as recited in **claim 31** (Application at Figure 9; page 20, line 6-page 21, line 26). As noted above, unlike conventional systems, the claimed invention may compensate wavelength dispersion of an optical signal in a specific wavelength range due to a portion of the external transmission path (Application at page 23, lines 15-24).

In addition, neither the alleged prior art Figures 1 and 2, nor Huber, nor Okuno, any combination thereof, teaches or suggests "*first and second wavelength dispersion compensators which are formed in said second transmission path and compensate for a wavelength dispersion due to a change of transmission path length when said transmission path is switched by said optical switch between said first and second transmission paths*", as recited in **claim 32**(Application at Figure 10; page 21, line 27-page 22, line 22). As noted above, unlike conventional apparatuses, the claimed invention can compensate for a wavelength dispersion due to a change of transmission path length **when the transmission path is switched by the optical switch** between the first and second transmission paths (Application at Figure 10; page 23, line 25-page 24, line 10).

Clearly, these features are not taught or suggested by the cited references. Indeed, with respect to claims 31 and 32, Applicant would point out that these two embodiments are discussed in detail in the Application (e.g., see Figures 9 and 10, respectively). However, the Examiner barely mentions these two claims in the Office Action, stating only that Figure 2 in the Application discloses a branching unit which includes a plurality of optical splitter/combiners and an optical switch. Nowhere does the Examiner even attempt to identify where most of the elements/limitations of these claims can be found in any of the references. In fact, claim 31 does not even recite an optical switch and therefore the Examiner's comments with respect to claim 31 are meaningless.

Applicant submits that nowhere do any of the references teach or suggest a light branching apparatus having either **a first wavelength dispersion compensator** for the one of the plurality of optical signals branched to the second station, and **a second wavelength dispersion compensator** for the optical signal from the second station, as recited in **claim 31**, and certainly do not teach or suggest first and second wavelength dispersion compensators which are formed in the second transmission path and compensate for a wavelength dispersion **due to a change of transmission path length when the transmission path is switched** by the optical switch between the first and second transmission paths, as recited in **claim 32**. Thus, Applicant respectfully requests that the Examiner carefully consider all of the embodiments in the Application (e.g., Figures 9 and 10), and carefully examine these claims and provide Applicant with another non-final Office Action which clearly identifies where the Examiner alleges that the features of claims 31 and 32 can allegedly be found in the references.

With respect to claims 24-29 clearly none of the cited references teach or suggest the light branching apparatus of claim 20, from which claims 24-29 depend directly or indirectly. Indeed, the Examiner attempts to rely on Okuno at Figure 11 and col. 7 to support his position, but this is clearly unreasonable.

Indeed, Figure 11 merely depicts one dispersion compensation fiber (DCF) 23, and not a plurality of DCF as alleged by the Examiner. Moreover, Okuno merely states that the DCF 23 "compensates for the cumulative dispersion of the SMF 21 and DSF 22 in the 1.58-μm wavelength band" (Okuno at col. 7, [0079]).

Thus, Okuno clearly does not teach or suggest an optical splitter which splits the plurality of optical signals from the light transmitter station into at least a first optical channel signal on a first channel in the main transmission path and a plurality of second optical channel signals on a plurality of second channels in the sub-transmission path, a first wavelength dispersion compensator for compensating wavelength dispersion **due to the optical splitter on** the main transmission path, and a second wavelength dispersion compensator for compensating wavelength dispersion **due to the optical splitter** on the sub-transmission path as recited in claim 20.

Therefore, Okuno clearly does not teach or suggest the light branching apparatus having a wavelength dispersion compensator of the claimed invention. Therefore, Okuno certainly does not make up for the deficiencies of the alleged prior art and Huber.

Therefore, Applicant submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of the claimed invention. Therefore, Applicant respectfully request that the Examiner withdraw this rejection.

III. FORMAL MATTERS AND CONCLUSION

In view of the foregoing, Applicant submits that claims 9-16 and 20-37, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

Serial No. 10/765,955
KUD.036DIV

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully Submitted,

Date: 9/26/05

Phillip E. Miller, Esq.
Registration No. 46,060

McGinn IP Law Group, PLLC
8321 Old Courthouse Road, Suite 200
Vienna, VA 22182-3817
(703) 761-4100
Customer No. 21254

CERTIFICATE OF FACSIMILE TRANSMISSION

I hereby certify that the foregoing was filed by facsimile with the United States Patent and Trademark Office, Examiner Tran, Dzung D., Group Art Unit # 2633 at fax number (571) 273-8300 this 26th day of September, 2005.

Phillip E. Miller
Reg. No. 46,060